

# **GUIDELINES ON INFECTION CONTROL IN DENTAL CLINICS**

## 1. Introduction

The unique nature of dental procedures, instrumentation and patient care settings require specific strategies directed to the prevention of transmission of diseases among dental health care workers and their patients. The following guidelines are written to supplement previously published document 'Guidelines on Infection Control Practice in Clinics and Maternity Homes'. (Department of Health Infection Control Committee, December 1993) All dental health care workers are advised to observe the following recommended practices in addition to the practices and procedures outlined in the 'Guidelines on Infection Control Practice in Clinics and Maternity Homes'.

## 2. Disease transmission

Infections are spread if the following criteria are satisfied:

- (i) the presence of a susceptible host;
- (ii) the presence of pathogenic micro-organisms;
- (iii) there must be a portal of entry via which the organisms invade and colonize the susceptible host.

Absence of any one of these requisites will prevent the transmission of an infectious disease. Therefore, the goal of infection control is to eliminate one, two, or all of these criteria. It should be understood that exposure to micro-organisms and infection are not synonymous. It is impossible to avoid being exposed to micro-organisms; however, exposure will not cause disease unless the three previously mentioned criteria are present.

## 3. Routine precautions

Transmission of infection within the setting of dentistry may occur from the dental health care worker to the patient, from the patient to the health care worker or from patient to patient. Cases have been documented in which human immunodeficiency virus (HIV) or hepatitis B virus (HBV) was transmitted from dental health care workers to their patients and vice versa. Patient to patient transmission, although being reported only in medical settings so far, may potentially occur in dental practices.

The major documented routes of transmission of HIV and HBV in dental settings are (i) percutaneous inoculation and (ii) contact with an open wound, non-intact (e.g. chapped, abraded, weeping or dermatitic) skin, or mucous membranes to blood, blood contaminated body fluids or concentrated viruses. Blood is the single most important source of HIV and HBV in dental practice. Protective measures against HIV and HBV should focus primarily on preventing these types of exposures to blood as well as on delivery of Hb vaccination.

Since it is now known that persons carrying blood-borne viruses, including both health care workers and patients, may not have been identified and are thus not aware of their own condition, it follows that procedures adopted routinely for ALL practices must be adequate to prevent cross-infection.

Under current technology, it is recognized that the risks of accidental percutaneous injury during dental procedures cannot be reduced to zero. While the risk of HBV transmission could be eliminated by immunization, the risk of exposure to the blood of HIV infected individual is a special concern to dental health care workers. It is considered justifiable to apply additional infection control measures when performing invasive procedures on individuals with known HIV infection.

Dental health care workers who consider themselves at increased risk of HIV infection should arrange confidential testing. Those who are infected must seek appropriate medical advice to ensure they pose no risk to patients (please refer to Advisory Council on AIDS published document “HIV infection and the health care workers – recommended guidelines”).

#### 4. Medical history

A thorough medical history should be taken and up-dated at subsequent examinations. Medical history screening is essential in alerting the clinician to medical problems that could, in conjunction with dental treatment, adversely affect the patient.

#### 5. Protective measures

Protection can be achieved by a combination of immunisation procedures, use of barrier techniques and strict adherence to routine infection control procedures.

##### (i) Immunisation

All dental health care workers are advised to be immunized against HBV unless immunity from natural infection or previous immunization had been

documented

(ii) Protective coverings

Uniforms

Uniforms should be changed regularly and whenever soiled. Gowns or aprons should be worn during procedures that are likely to cause spattering or splashing of blood.

Hand protection

Gloves must be worn for procedures involving contact with blood, saliva or mucous membrane. A new pair of gloves should be used for each patient. If a glove is damaged, it must be replaced immediately. Hands should be washed thoroughly with a proprietary disinfectant liquid soap prior to and immediately after the use of gloves. Disposable paper towels are recommended for drying of hands. Any cuts or abrasions on the hands or wrists should be covered with adhesive waterproof dressings at all times.

Protective glasses, masks or face shields

Protective glasses, masks or face shields should be worn by operators and close-support dental surgery assistants to protect the eyes against the spatter and aerosols which may occur during cavity preparation, scaling and the cleaning of instruments.

(iii) Sharp instruments and needles

Sharp instruments and needle should be handled with great care to prevent unintentional injury. Needles should never be recapped by using both hands in direct contact or by any other technique that involves moving the point of a used needle towards any part of the body. The needle can be recapped by laying the cap on the tray, placing the cap in a resheathing device or holding the cap with forceps before guiding the needle into the cap.

(iv) First aid and inoculation injuries

In the event of a skin puncture by a contaminated instrument, the wound should be encouraged to bleed and washed thoroughly with running water.

All incidents should be reported to the officer i/c of the clinic. Where there is reason to be concerned about the possible transmission of infection, advice on appropriate serologic testing, medical evaluation and follow-up could be sought from Accident and Emergency Department or AIDS Unit (Tel. 7808622), and the address and contact telephone of the patient concerned should be recorded.

#### 6. Instrument sterilization

All instruments should be cleaned thoroughly before sterilization by rinsing and scrubbing with detergent and water. Splashing of water should be avoided. Heavy duty gloves and, where appropriate, face protection shield, should be worn.

Items which will penetrate tissues must be sterilized in an autoclave or hot air steriliser. Items which will touch mucous membrane but not penetrate tissues should similarly be sterilized by heat, or, if not possible, disinfected, e.g., by immersion in 2% glutaraldehyde solution in a closed container according to the manufacturer's instructions. All chemical residues must then be removed by thorough rinsing before use or storage.

Handpieces, ultrasonic scaler inserts/tips and air-water syringe tips where detachable should be flushed for 30 seconds, dismantled, cleaned, oiled where required, and autoclaved between patients. (Handpieces, etc. left overnight should be allowed to discharge water for two minutes at the beginning of the day). Handpieces which cannot be autoclaved are disinfected with an appropriate virucidal agent.

Following sterilization, all instruments should be stored in clean containers to prevent recontamination. Surgical and endodontic instruments should be kept in closed containers. It may be necessary to re-sterilize them immediately before they are used and care should be taken to ensure the instruments are cool prior to use.

#### 7. Surface disinfection

Surfaces that are likely to become contaminated may be de-contaminated after treatment or protected with disposable coverings before they become contaminated.

Effective cross-infection control is aided by a strict system of zoning and the use of sterilizable trays. Procedures should be adopted which limit the areas touched and contaminated each time a patient is treated.

Between clinical sessions, work surfaces should be thoroughly cleaned and decontaminated with ethyl alcohol (70%). If there is visible blood or pus, the surface should be cleaned and disinfected with sodium hypochlorite (0.5%), followed by water rinse. Protective gloves should be worn and care taken to minimise direct skin, mucosal or eye contact with these disinfectants.

#### 8. Aspiration and ventilation

The use of high volume aspiration will reduce any risk of cross-infection from aerosols. The risk is further reduced by good ventilation.

The tubings of high volume aspirators and saliva ejectors should be flushed with water between patients and with disinfectant (sodium hypochlorite, 0.1%) regularly or according to the manufacturer's instructions.

#### 9. Disposal of waste

Sharp items including needles and scalpels and local anaesthetic cartridges, should be placed into puncture proof containers which should be securely sealed. These, together with all medical waste must be disposed of in red bags, securely fastened. Red plastic bags are to be picked up by a special collection service for hospitals and clinics.

Non infective waste should be disposed of in thick black plastic bags securely fastened.

Liquid waste should be carefully poured into a drain and then flushed with water. Spatter and splash should be avoided.

#### 10. Laboratory items

Impressions and appliances should be rinsed thoroughly to remove all visible blood and debris. Gloves should be worn when handling impressions and pouring models. Certain types of impression material (silicone, polysulphur) can be disinfected by total immersion in glutaraldehyde (2%) or sodium hypochlorite (0.1%). Other materials (alginate, polyether) may be disinfected by submerging for several seconds in sodium hypochlorite (0.1%), which should then be wrapped in a hypochlorite saturated paper towel and kept in a closed container for the recommended disinfectant time.

11. Additional precautions to be taken when performing invasive procedures on HIV infected individuals

- (a) If possible, schedule the patient surgery at the end of the list.
- (b) The team should be limited to essential members of staff and the procedures should be performed by experienced, fully trained staff.
- (c) The operator should wear two pairs of gloves. Plastic gown, cap mask and protective eye wear should be worn.
- (d) All procedures should be performed in a way which minimizes the formation of droplets, spatter and aerosols, utilizing high volume vacuum aspirators, rubber dams where appropriate and proper patient positioning. Ultrasonic scalers should be avoided.
- (e) Avoid the use of instruments which cannot be easily decontaminated. Instruments and tools used should be handled and cleansed by experienced staff before autoclaving.
- (f) After the operation, all surfaces inside the surgery and equipment should be cleaned and decontaminated with appropriate disinfectants.

Recommended methods of decontamination for dental items

Item	Recommended Method	Alternative Method
Amalgam/composite carriers	Wipe with 70% ethyl alcohol	
Articulators	Wipe with 70% ethyl alcohol	
Attachments dental units	Wipe with 2% glutaraldehyde, rinse	Wipe with 70% alcohol
Bracket tables	Wipe with 70% ethyl alcohol	
	If there is visible blood or pus, clean and disinfect with 0.5% sodium hypochlorite, rinse	
Burs – diamond	Clean with metallic brush and detergent, autoclave	
Burs - steel tungsten-carbide	Clean with metallic brush and detergent, rinse, dry and dry heat	Clean with metallic brush and detergent, rinse, dry and immerse in 2% glutaraldehyde for 10 hours, rinse
Dental chairs	Clean with detergent and water	
	If there is visible blood or pus, clean and disinfect with 0.5% sodium hypochlorite or 2% glutaraldehyde, rinse	
Dental mirrors	Clean with detergent and water, autoclave, store in covered pack or container	

Item	Recommended Method	Alternative Method
Denture	Clean with detergent and water	
	If contaminated with blood, immerse in 0.1% sodium hypochlorite for 10 mins. and rinse	
Extraction Forceps	Clean with detergent and water, autoclave, store in covered pack or container	
Gloves	Disposable	
Handpieces Air motor for slow speed handpieces	Flush for 30 sec., Clean with detergent and water, oil, and autoclave	Flush or 30 sec., Clean with detergent and water, oil, surrounding the handpiece by a gauze pad soaked in 2% glutaraldehyde for 10 mins., rinse with water
Impressions – Alginate : (plastic trays)  Zinc-oxide eugenol paste :  Alginate : (metallic trays)  Rubber base :	Rinse, get rid of excess water, spray with 0.1% sodium hypochlorite, put in closed container for 10 mins.  “  Rinse, get rid of excess water, spray with 2% glutaraldehyde, put in closed container for 10 mins.  Rinse, immerse in 2% glutaraldehyde for 10 mins., rinse	
Injection needles for local anaesthetic	Disposable	



Item	Recommended Method	Alternative Method
Instrument trays	Clean with detergent and water, autoclave	
Orthodontic bands	Clean with detergent and water, autoclave	
Orthodontic pliers	Clean with detergent and water, autoclave	
Polishing stones	Clean with detergent and water, autoclave	
Prophylactic cups and brushes	Disposable	Clean with detergent and water, autoclave
Protective, plastic glasses and shields	Wipe with 0.1% sodium hypochlorite	
Root canal instruments	Clean with detergent and water, autoclave, store in covered container	
Rubber dam clamps	Clean with detergent and water, autoclave	
Rubber dam forceps	Clean and autoclave	Clean, immerse in 2% glutaraldehyde for 10 mins., rinse
Rubber dam punches	Clean with detergent and water	
Saliva ejectors	Disposable	
Saliva ejectors, metallic	Clean with detergent and water, and autoclave	

Item	Recommended Method	Alternative Method
Scalpel blades	Disposable	
Stainless steel cups	Clean with detergent and water, autoclave	
Stainless steel instruments	Clean with detergent and water, autoclave, store in covered pack or container	Dry heat
Suction tips	Clean with detergent and water, autoclave	
Suction tube adaptors	Wipe with 70% alcohol after each use. Autoclave weekly	
Surgical instruments	Clean with detergent and water, autoclave, store in covered pack or container	Dry heat
Syringe – local anaesthetic	Clean with detergent and water, autoclave, store in covered pack or container	Dry heat
Syringe tips – detachable 3-way	Clean with detergent and water, autoclave	
Ultrasonic scaler tips and inserts	Clean with detergent and water, autoclave, store in covered pack or container	
Wax bite block, wafer	Rinse, immerse in 0.1% sodium hypochlorite for 10 mins., rinse	
X-ray films : (with disposable plastic cover)	Dispose the cover and change gloves	Remove plastic packet and drop the film with non-touch technique in red light. Change gloves before processing
(without disposable plastic cover)	Immerse in 0.1% sodium hypochlorite for 2 mins., rinse	